International Journal for Research Trends in Social Science & Humanities
Volume 4, Issue 3
May-Jun- 2026, PP 1-12

Analyzing the Digital Rupee Adoption in India: A Statistical and Sentiment Analysis of Consumer Awareness and Acceptance

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Abstract- The Digital Rupee (e₹), the Central Bank Digital Currency (CBDC) issued by the Reserve Bank of India (RBI), represents a pivotal advancement in India's rapidly evolving digital financial ecosystem. Successful deployment of this new digital money requires customer awareness, acceptance, and a favourable impression. To comprehend customer knowledge, acceptability, and attitude about the Digital Rupee and to investigate the interrelations among these factors. A quantitative, descriptive, and analytical research approach was used, and primary data was collected from 200 respondents using a standardised questionnaire including demographic variables and statements assessed on a 5-point Likert scale. Descriptive data, including frequency and percentage analyses, were used to assess respondents' awareness, acceptability, and sentiment, while Pearson's Product Moment Correlation was utilised to test the offered hypotheses. The findings indicate a modest level of knowledge of the Digital Rupee among respondents, who express favourable opinions about its implementation for everyday transactions. Furthermore, the survey indicates favourable consumer opinion towards the prospective growth and acceptance of the Digital Rupee in India. The correlation analysis indicates a robust positive relationship between consumer awareness and consumer acceptance, as well as between consumer acceptance and consumer sentiment. This suggests that an increase in awareness of the Digital Rupee correlates with heightened consumer acceptance, resulting in favourable sentiment. The report advocates for comprehensive public awareness initiatives, including financial education programmes and digital outreach, to enhance consumer trust and facilitate the acceptance of the Digital Rupee as a secure and convenient digital payment instrument in India's shift towards a cashless economy.

Keywords- Digital Rupee (e₹), Central Bank Digital Currency (CBDC), Consumer Awareness, Consumer Acceptance, Consumer Sentiment, Digital Payments, Financial Technology (FinTech), Reserve Bank of India (RBI), Digital Economy, India.

I. Introduction

The proliferation of digital technology has transformed the global financial system, and digital payments are now prevalent. The transition to a cashless economy in India is accelerating, propelled by causes such as the Digital India project, the implementation of the Unified Payments Interface (UPI), and the increasing prevalence of smartphones. The Reserve Bank of India (RBI) introduced the Digital Rupee (e₹) as

part of its digital transformation to provide a secure, efficient, and sovereign digital currency that can replace conventional fiat currency.

The Digital Rupee differs from cryptocurrencies since it is issued and controlled by the RBI, ensuring a stable, legally recognised, and reliable currency. "The introduction of the Digital Rupee is expected to augment digital payments, improve financial inclusion, reduce transaction costs, and facilitate the modernisation of India's financial institutions." However, for its sustained success, customers must be informed, accept, and possess confidence in using it as a novel digital currency.

Although the use of digital payments has proliferated in India, awareness of the Digital Rupee remains rudimentary. Consumers may have misunderstandings about its functionality, security, and distinctions from cryptocurrencies that might influence its adoption. Consequently, it is essential to assess the public's knowledge, acceptability, and attitude to identify the elements that promote or hinder its adoption.

This research seeks to investigate consumers' knowledge, acceptability, and attitude on the Digital Rupee in India via a quantitative methodology. The research investigates the interrelations among these parameters, providing critical insights for policymakers, financial institutions, and other stakeholders engaged in promoting the effective implementation of the Digital Rupee and improving India's digital payment infrastructure.

II. Review of Literature

Auer, Raphael; Cornelli, Giulio; Frost, Jon (2020). The authors analyzed the motivations, policy directions, and technological designs of various central banks and their entry into Central Bank Digital Currencies (CBDCs) to understand the global development of CBDCs. In their study, they pointed out that some of the major motivations behind CBDC development are to enhance the efficiency of payment, to foster financial inclusion and monetary sovereignty. The paper also highlighted the need for public trust and the right technological infrastructure to ensure the successful implementation of CBDC. The study offers a sound theoretical background to the understanding of consumer confidence's role in the adoption of digital currencies.

Soderberg, Gabriel et al., (2023) The researchers explored the factors that affect the adoption of India's Central bank digital currency.Through an empirical study based on survey data, they identified consumer willingness to adopt Digital Rupee as being significantly affected by factors such as trust, transparency, interoperability, ease of use, and perceived security. The study found that boosting awareness and trust in the Digital Rupee is essential for its adoption. These findings directly relate to the present study that concentrates on awareness, acceptance and consumer sentiment.

Di Maggio, Marco, Ghosh, Pulak, Ghosh, Soumya Kanti and Wu, Andrew (2024). Overall, the study was one of the first empirical analyses of India's retail CBDC pilot using data at the transaction level. The study results showed that policy measures and transaction incentives have a positive impact on CBDC adoption, which may lead to a decrease in reliance on traditional payment systems and bank deposits as CBDC usage grows.The authors noted that the success of the Digital Rupee will be crucial for its long-term viability, as consumer behaviour is a key factor.

Kaur, Harshdeep, Mehta, Kanika, Mago, Monita (2025).The authors used an extended UTAUT framework to explore the behavioural intentions of Indian households for the adoption of CBDC. The study found that the perceived trust, perceived security, attitude, and performance expectancy were significant variables affecting consumers' intention to use Digital Rupee, based on the results obtained from 386 respondents. The study proposed to enhance awareness-building initiatives and build consumer trust for the broader acceptance of India's CBDC.

Objectives of the Study

The study aims can be listed as follows:

- To explore and assess the consumer awareness of Digital Rupee (e₹) in India.
- To gauge the acceptance and adoption of the Digital Rupee for regular financial interactions.
- To understand the stakeholders' sentiment on the Digital Rupee, and the future adoption of Digital Rupee in India.
- To study consumer awareness, acceptance and sentiment toward Digital Rupee.

III. Research Methodology

1. Research Design

The present study is research of descriptive and quantitative type with analytical approach to analyze consumer awareness, acceptance and sentiment on Digital Rupee ‘e₹' in India. The data collection technique used was survey through cross sectional. The quantitative method enabled the data to be statistically analysed to examine consumer perception and the relationship between the variables in the study.

2. Population and Sample

The criteria for selection of the target population were that they know about digital payment systems and were of various demographic backgrounds. The total respondents in the study were 200. The respondents were selected by convenience sampling technique as they were easily accessible and willing to participate in the survey.

3. Data Collection

The study relied on primary data, obtained by the structured questionnaire through online and offline mode. The questionnaire had two parts: the first part included

demographic questions, and the second part contained questions related to the awareness, acceptance, and sentiment towards the Digital Rupee on a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

4. Statistical Tools Used

Collected data were coded, tabulated, and analyzed with the help of IBM SPSS Statistics (Version 26). To provide descriptive statistics of respondents' demographic characteristics and perceptions, frequency, percentage, mean and standard deviation were used. Pearson's Product Moment Correlation was used to examine the relationships among consumer awareness, acceptance, and sentiment towards the Digital Rupee. The hypotheses were tested at 5% significance level ($p < 0.05$).

IV. Analysis and Interpretations

1. Demographic Profile

Table 1: Demographic Profile of the Respondents (N = 200)

Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	112	56.0
	Female	84	42.0
	Prefer not to say	4	2.0
	Total	200	100.0
Age Group	Below 20 years	21	10.5
	21–30 years	89	44.5
	31–40 years	47	23.5
	41–50 years	28	14.0
	Above 50 years	15	7.5
	Total	200	100.0
Educational Qualification	Higher Secondary	24	12.0
	Graduate	82	41.0
	Postgraduate	68	34.0
	Doctorate	11	5.5
	Other	15	7.5
	Total	200	100.0
Occupation	Student	46	23.0
	Government Employee	29	14.5
	Private Employee	61	30.5
	Self-employed/Business	31	15.5
	Homemaker	16	8.0
	Retired	9	4.5
	Other	8	4.0
	Total	200	100.0

The results in Table 1 show the demographic characteristics of the 200 respondents who participated in the study. Gender-wise the male population 56.0% (112) was reasonably well represented compared to its female counterpart 42.0% (84), with 2.0% (4) preferring not to state their gender.

Regarding age, the largest proportion of respondents (44.5%, n = 89) belonged to the 21–30 years age group, followed by 31–40 years (23.5%, n = 47). Respondents aged 41–50 years constituted 14.0% (28), while 10.5% (21) were below 20 years and 7.5% (15) were above 50 years. This distribution indicates that the survey mainly reflected the opinions of youth and middle-aged adults, who tend to be more involved with digital financial services.

Over 41.0% (82) of the respondents had educational qualification of graduate and 34.0% (68) had post graduate degree. 12.0% (24) of the respondents had higher secondary education and the other educational categories (7.5%, 15) included respondents with doctoral education (5.5%, 11). The results show that a majority of respondents had a higher education, which means they are fairly educated in understanding digital financial innovation like the Digital Rupee.

In terms of occupation, 30.5% (61) of the respondents were employed in the private sector, 23.0% (46) students. The percentages of self-employed/business professionals, government employees, homemakers, retired, and other occupations were 15.5% (31), 14.5% (29), 8.0% (16), 4.5% (9), and 4.0% (8), respectively. The occupational distribution is representative of a variety of occupations and segments of society, making the results of this study more reliable and generalizable.

2. Awareness of the Digital Rupee (e₹)

Table 2: Respondents' Familiarity with the Concept of the Digital Rupee (e₹)

Response	Frequency (f)	Percentage (%)
Strongly Disagree	8	4.0
Disagree	18	9.0
Neutral	34	17.0
Agree	87	43.5
Strongly Agree	53	26.5
Total	200	100.0

Table 2 shows the respondents' level of awareness about the Digital Rupee (e₹). The results show that 70.0% of the respondents (87) agreed and strongly agreed to their familiarity with Digital Rupee. In the meantime, 17.0% (34) were neutral, while 9.0% (18) disagreed and 4.0% (8) strongly disagreed with the statement. The findings indicate that a significant majority of the respondents have a fundamental understanding of Digital Rupee, which is gaining momentum in India through government initiatives and digital payment awareness campaigns, highlighting its growing prominence.

Table 3: Respondents' Understanding of the Difference between the Digital Rupee and Cryptocurrencies

Response	Frequency (f)	Percentage (%)
Strongly Disagree	15	7.5
Disagree	28	14.0
Neutral	47	23.5
Agree	74	37.0
Strongly Agree	36	18.0
Total	200	100.0

Table 3 shows the awareness of the respondents about the difference between cryptocurrencies like Bitcoin and Digital Rupee. Data shows that 37.0 % (74) agreed with the statement and 18.0 % (36) strongly agreed with it, which makes 55.0 % of the respondents say they have a positive level of understanding. However, 23.5% (47) remained neutral, while 14.0% (28) disagreed and 7.5% (15) strongly disagreed. The results indicate that while over half of the respondents are aware of the difference between the Digital Rupee and cryptocurrencies, there is a significant number who do not grasp the fundamental differences, highlighting the need for financial education for public use.

Table 4: Respondents' Awareness that the Digital Rupee is Issued and Regulated by the Reserve Bank of India

Response	Frequency (f)	Percentage (%)
Strongly Disagree	10	5.0
Disagree	21	10.5
Neutral	39	19.5
Agree	82	41.0
Strongly Agree	48	24.0
Total	200	100.0

Table 4 shows the respondents' awareness about the regulatory authority of the Digital Rupee. 41.0% (82) agreed and 24.0% (48) strongly agreed to know that the Digital Rupee is issued and regulated by the Reserve Bank of India (65.0%). Additionally, 19.5% (39) remained neutral, while 10.5% (21) disagreed and 5.0% (10) strongly disagreed. The findings reveal that a significant majority of the respondents are aware of and correctly identify the Digital Rupee as an official Central Bank Digital Currency (CBDC), indicating a relatively high awareness level about the regulatory framework for the Digital Rupee.

3 Acceptance and Adoption Intention

Table 5: Respondents' Willingness to Use the Digital Rupee for Everyday Transactions

Response	Frequency (f)	Percentage (%)
Strongly Disagree	11	5.5
Disagree	22	11.0
Neutral	42	21.0
Agree	81	40.5
Strongly Agree	44	22.0
Total	200	100.0

Table 5 shows the respondents' preferences for using DR for day-to-day transactions. The results show that 62.5% of the respondents agreed or strongly agreed with the item (40.5% agreed and 22.0% strongly agreed). Meanwhile, 21.0% (42) remained neutral, whereas 11.0% (22) disagreed and 5.5% (11) strongly disagreed. These findings indicate that consumer acceptance of the Digital Rupee is encouraging, as a majority of respondents say they are willing to use the Digital Rupee for daily financial transactions with the relatively new launch of the Digital Rupee.

Table 6: Respondents' Belief that the Digital Rupee Will Make Digital Payments More Secure

Response	Frequency (f)	Percentage (%)
Strongly Disagree	9	4.5
Disagree	18	9.0
Neutral	39	19.5
Agree	87	43.5
Strongly Agree	47	23.5
Total	200	100.0

Table 6 shows the perception of the respondents about the security of Digital Rupee based payments. Most said that they felt very secure with it (87, 43.5%) or fairly secure (47, 23.5%) (67.0% positive). In addition, 19.5% (39) were neutral, 9.0% (18) disagreed and 4.5% (9) strongly disagreed. The results have shown that the respondents have high levels of trust in the Digital Rupee as a secure medium of digital payment, which will help in promoting the adoption of Digital Rupee.

Table 7: Respondents' Willingness to Recommend the Digital Rupee to Friends and Family

Response	Frequency (f)	Percentage (%)
Strongly Disagree	10	5.0
Disagree	19	9.5
Neutral	44	22.0
Agree	82	41.0

Strongly Agree	45	22.5
Total	200	100.0

Table 7 displays the respondents' recommendation intent of Digital Rupee to their family and friends. The results show that 41.0% (82) agree and 22.5% (45) strongly agree with the statement, which equals 63.5% of the respondents. In addition, 22.0% (44) had a neutral attitude, and 9.5% (19) and 5.0% (10) disagreed and strongly disagreed, respectively. These results indicate that the majority of the respondents are positive about the Digital Rupee and would recommend it to others, indicating strong consumer acceptance and confidence in its adoption.

4. Overall Sentiment toward the Digital Rupee

Table 8: Respondents' Overall Positive Opinion about the Digital Rupee

Response	Frequency (f)	Percentage (%)
Strongly Disagree	7	3.5
Disagree	16	8.0
Neutral	38	19.0
Agree	89	44.5
Strongly Agree	50	25.0
Total	200	100.0

Table 8 displays the overall opinion of the respondents about Digital Rupee. The results show that 44.5% (89) of the respondents agreed and 25.0% (50) strongly agreed that they hold a positive view on Digital Rupee, with a combined total of 69.5% positive responses. In the meantime, 19.0% (38) had a neutral view, 8.0% (16) disagreed, and 3.5% (7) strongly disagreed. The results suggest that there is a significant positive perception of Digital Rupee among the respondents, which reflects the growing confidence in the Central Bank Digital Currency as a new digital payment tool in India.

Table 9: Respondents' Belief that the Digital Rupee Will Become Widely Accepted in India in the Future

Response	Frequency (f)	Percentage (%)
Strongly Disagree	6	3.0
Disagree	14	7.0
Neutral	35	17.5
Agree	91	45.5
Strongly Agree	54	27.0
Total	200	100.0

Table 9 shows the perception of respondents about the acceptance of the Digital Rupee in India in the future. The results show that 72.5% (91+54) of the respondents agree or strongly agree that the Digital Rupee will be widely adopted in the future. In contrast, 17.5% (35) remained neutral, while 7.0% (14) disagreed and 3.0% (6) strongly

disagreed. The findings indicate that the respondents have a positive outlook on the future potential of the Digital Rupee, viewing it as a promising tool for integrating digital payments into India's financial landscape.

5. Hypothesis Testing

Pearson's Product Moment Correlation was used to delve into the correlation between consumer awareness, acceptance, and sentiment towards the Digital Rupee (e₹). Significance level was set at 0.05 level. The composite scores from the respective questionnaire items were used to test the hypotheses.

Hypothesis 1:

- $H0_1$: There is no significant relationship between consumer awareness and consumer acceptance of the Digital Rupee.
- $H1_1$: There is a significant relationship between consumer awareness and consumer acceptance of the Digital Rupee.

Table 10: Relationship between Consumer Awareness and Consumer Acceptance

Variables	Pearson's r	p-value	Decision
Consumer Awareness & Consumer Acceptance	0.684	0.000	Reject $H0_1$

Table 10 shows the Pearson correlation of consumer awareness and consumer acceptance of Digital Rupee. There was a significant positive correlation between the two variables ($r = 0.684$, $p < 0.001$). The p-value obtained (0.000) is less than the prescribe value of (0.05), hence the null hypothesis is rejected.

The results suggest that those with a higher level of Digital Rupee awareness are much more inclined to adopt and utilize the Digital Rupee in financial transactions. This suggests that awareness plays a crucial role in promoting consumer acceptance of the Digital Rupee. Hence building public awareness through awareness programmes and financial literacy programmes could have a positive impact on its adoption in India.

Hypothesis 2:

- $H0_2$: There is no significant relationship between consumer acceptance and consumer sentiment towards the Digital Rupee.
- $H1_2$: There is a significant relationship between consumer acceptance and consumer sentiment towards the Digital Rupee.

Table 11: Relationship between Consumer Acceptance and Consumer Sentiment

Variables	Pearson's r	p-value	Decision
Consumer Acceptance & Consumer Sentiment	0.752	0.000	Reject $H0_2$

Table 11 shows the correlation between the consumer acceptance and consumer sentiment on Digital Rupee. Results show that there is a very high positive correlation between the values of acceptance and sentiment ($r = 0.752$, $p < 0.001$). The calculated p value (0.000) is less than the significance level of 0.05, so the null hypothesis is rejected.

The findings suggest that overall, there is a correlation between the willingness to use and recommend the Digital Rupee and the positive perception of its future potential and adoption rate. The relationship appears to be strong, indicating a close connection between consumer acceptance and positive sentiment for the Digital Rupee, which underscores the need to build user confidence and trust in digital currency initiatives.

VI. Conclusion

The launch of the Digital Rupee (e₹) significantly advances India's financial digitalisation and its objective of becoming a paperless society. "The current research examined customer knowledge, acceptability, and attitude towards the Digital Rupee, as well as the link across these variables." The findings revealed that most respondents were aware of the Digital Rupee and its status as an official digital currency issued by the Reserve Bank of India. Consumer understanding of its distinction from cryptocurrencies was rather low, however it was seen positive overall.

The survey indicated a favourable disposition towards consumer adoption, as most participants expressed a willingness to use the Digital Rupee for daily transactions and acknowledged its potential to enhance the security of digital transactions. The participants shown a favourable disposition about the prospective implementation of the Digital Rupee in India. Hypothesis testing yielded significant positive outcomes for consumer awareness and acceptance, as well as for acceptance and sentiment, indicating that an increase in consumer awareness positively influences consumer acceptance, which in turn positively affects consumer sentiment regarding the Digital Rupee.

The findings indicate a need to improve public knowledge via financial literacy programmes, digital education campaigns, and communication strategies on the characteristics and advantages of the Digital Rupee. These may enhance customer confidence and accelerate its adoption across many social groupings. The Digital Rupee has the potential to revolutionise digital payments in India by providing a safe,

dependable, and widely embraced payment alternative that promotes financial inclusion and enhances the digital payment ecosystem.

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